

THE REMARKS

Applicant believes that entry of the above amendments and consideration of the following remarks will place this application into condition for allowance.

I. THE CLAIMS

Claims 1 and 5 to 70 are presented for examination.

Claim 1 has been amended to include the subject matter of original Claim 2 and to limit the auxins of Claim 1 and Claims 5 to 24 depending therefrom to the synthetic auxins, auxin metabolites, auxin precursors, auxin derivatives and mixtures thereof as specified in original Claim 2. Accordingly, original Claims 2 to 4 have been cancelled. Claims 5, 8, 9, 11, 13, 14, 18, 19, 21, 22 and 23 have been amended to change their dependency from cancelled Claim 2 to amended Claim 1. Claim 25 has been amended to limit the specified application of auxin to seeds, seed pieces or tubers for a plant prior to planting or to roots of a plant after planting. Claim 28 has been amended to correct an obvious semantic error so that it now relates to the application of auxins to "seed beans" and not bean seeds.

Claims 1 and 5 to 32 are directed to methods for inhibiting disease on or in plant tissues by applying an auxin (in Claims 1 and 5 to 24 a synthetic auxin, metabolite, precursor or derivative) or a plant growth hormone, precursor or conjugate (Claims 25-27) to seeds or tubers before planting or to roots of the plants after planting. It is known from the prior art that such compounds may result in uncontrolled growth and death of plants. That knowledge forms the basis of several very effective commercial weed killers. Accordingly, in order to achieve the desired results, it is critical that the auxin or plant growth hormone be applied in an amount effective to inhibit growth of harmful

organisms causing the disease, but also in an amount insufficient to negatively effect growth of the plant tissues. That limitation is found in each of independent Claims 1, 25 and 28.

Claims 33-59 are directed to methods for inhibiting the infestation of plants by insects and their larvae by applying an auxin (Claims 33-50 and 54-59) or a plant growth hormone, precursor or conjugate (Claims 51-53) to specific plant parts after planting or to seeds or tubers before planting. Again, because such compounds may result in uncontrolled growth and death of plants, in order to achieve the desired results, it is critical that the auxin or plant growth hormone be applied in an amount effective to inhibit infestation by the insects and their larvae, but also in an amount insufficient to negatively effect growth of the plant tissues. That limitation is found in each of the independent Claims 33, 51 and 54.

Finally, Claims 60-70 are directed to seeds, seed pieces and tubers that have been treated with an auxin (Claims 60-67) or a plant growth hormone (Claims 68-70) to produce plants having enhanced resistance to disease. Again, because such compounds may result in uncontrolled growth and death of plants, in order to achieve the desired results, it is critical that the auxin or plant growth hormone be present on the seed or seed piece in an amount effective to inhibit growth of harmful organisms, but also in an amount insufficient to negatively effect growth of the emerging plant tissues. That limitation is found in each of the independent Claims 60 and 68.

II. THE REJECTION

The Obviousness Rejection

Original Claims 1-70 have been rejected as obvious under 35 U.S.C. § 103(a) over the disclosure in newly cited Chinese Patent Publication No. 1,262,037 (the Chinese publication). It is correctly stated in the Office Action that plant auxin is a known plant hormone. It is also asserted that the Chinese publication teaches that plant auxin is an effective anti-bacterial, anti-viral and anti-fungal agent at low concentrations.

From this meager teaching, the Examiner concludes that it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention claimed herein was made to have applied plant hormones such as auxins to plant tissues as anti-microbial agents. Then, with no supporting teaching or even suggestion from the prior art, the Examiner leaps to the conclusion that it would have been apparent that other benefits, including the inhibition of insect pests and their larvae, could also be achieved by such application of plant hormones.

The Examiner, again without citation to any supporting prior art, concludes that co-application with fertilizer components, including the alkaline earth and transition metal micronutrients, and application to any plant part, including seeds, would have been *prima facie* obvious because those components are recognized secondary nutrients and are conventionally applied with seed dressings. Finally, the Examiner asserts, again without any supporting reference, that formulation in any conventional composition, including slow release formulation, and determination of appropriate concentrations and application rates are within the skill of the ordinary artisan.

III. THE RESPONSE

The only reference now applied against the claims is the newly cited Chinese Patent Publication No. 1,262,037 (the Chinese publication) directed to a proposed application of natural plant auxin. None of the prior art cited in the present Office Action, including this newly cited Chinese publication, discloses or even suggests the use of synthetic auxins (Claims 1 and 5 to 24) for inhibiting plant diseases, the use of auxins to inhibit infestation of plants by insects and their larvae (Claims 33 to 59) or the application of such auxins to seeds and tubers before planting to inhibit disease and/or insect infestation (Claims 25 to 32). Further, neither the Chinese publication nor any of the other cited prior art discloses or suggests the seeds or tubers treated with the specified auxins or plant growth hormone as disclosed and claimed herein (Claims 60 to 70).

Thus, the amended and original claims as presented herein distinguish over the newly cited Chinese publication and the other prior art of record and should be allowed.

A. The Teachings of the Chinese Publication

The newly cited Chinese publication merely suggests that plant, i.e., natural, auxins appear to kill some bacteria and viruses and, accordingly, may be useful for delaying the onset of diseases caused by these bacteria and viruses for short periods of time. The Chinese publication suggests that some bacteria and viruses, when immersed in solutions of natural auxin at concentrations above about 0.0001 ppm auxin (apparently in water) cannot survive. Further, such solutions appear to destroy the toxins created by these bacteria and viruses. On the other hand, the Chinese

publication states that at lower concentrations, i.e., concentrations less than about 0.0000001 ppm auxin there is apparently no effect on the bacteria and viruses or on their toxins. From this, the Chinese reference concludes that plant auxin appears to be a natural agent capable of eliminating bacteria and viruses and expelling the multiple toxins they produce. In the only experimental results mentioned (and it should be noted that essentially no details are provided to substantiate these results), the Chinese publication suggests that a single spray application of a 10-20 ppm auxin solution prior to fructification delayed the onset of several specified plant diseases by 5 to 10 days. Further delay is asserted with a second application, although no actual experimental data is provided. The Chinese publication does recognize that treatment of plants with higher levels of natural auxin may result in adverse effects on the plant.

B. The Deficiencies of the Chinese Publication

The Chinese publication neither discloses nor suggests that inhibition or control of infestation by insect pests and their larvae may be achieved by treating the plant tissues with auxins or plant growth regulators at a level sufficient to affect the insects and their larvae but insufficient to cause negative effects on the plant tissues. In fact, nothing in the Chinese publication suggests that auxins or plant growth regulators will have any effect on plant damaging insects and their larvae as discovered and claimed by Applicant herein. Further, the Examiner points to no other prior art reference to suggest this effect on insects and their larvae. Thus, the methods of Claims 33 to 59 are neither disclosed nor suggested by the Chinese publication nor any other cited prior art reference.

The Chinese publication merely discloses that certain bacteria and viruses cannot survive when immersed in solutions of plant or natural auxin and suggests that application of such solutions prior to fructification might delay the onset of diseases caused by these bacteria and viruses. There is no teaching or suggestion that one might employ synthetic auxins, auxin metabolites, auxin precursors and auxin derivatives to inhibit diseases on and in plant tissues. Thus, the methods of Claims 1 and 5 to 24 are neither disclosed nor suggested by the Chinese publication nor any other cited prior art reference.

Finally, the Chinese publication neither discloses nor suggests the application of auxins to seed, seed pieces or tubers prior to planting to inhibit the development of plant diseases in the emerging plants. Nor has the Examiner pointed to any other reference to suggest such application or the resulting seeds, seed pieces or tubers together with an auxin. Thus, the methods of Claims 25 to 32 and the seeds, seed pieces and tubers of Claims 60 to 70 are neither disclosed nor suggested by the Chinese publication nor any other prior art.

The Chinese publication fails to disclose or suggest at least one significant feature of each of the claims now pending in the present application. Further, none of the cited prior art teaches or suggests those features. Thus, none of the amended and original claims now pending in the captioned application are obvious in view of the limited disclosures of the Chinese publication.

C. The Independent Claims

Independent Claim 1 is now directed to the use of synthetic auxins, auxin metabolites, auxin precursors, auxin derivatives and mixtures thereof to inhibit disease

in plants. Neither the Chinese publication nor any of the other cited prior art discloses or suggests these materials. Further, the extensive use of synthetic auxins in commercial weed killers would hardly suggest to one of skill in the art that they be used on valuable crop plants to inhibit disease.

Independent Claims 25 and 28 are now directed to the use of auxin on seeds, tubers and seed beans before planting or roots of plants after planting. Neither the Chinese publication nor any of the other cited prior art discloses or suggests such an application. In fact, the only application of a natural auxin solution suggested by the Chinese publication is prior to fructification.

Independent Claims 33, 51 and 54 are directed to the use of auxins and plant hormones to inhibit infestation of plants by insects and larvae. Neither the Chinese publication nor any other cited prior art discloses or suggests such a use. The Examiner has pointed to no reference which even suggests that insects and their larvae may be controlled by application of auxins or plant hormones to plant tissues.

Finally, independent Claims 60 and 68, are directed to seeds, seed pieces and tubers which include thereon an auxin or plant hormone in an amount sufficient for producing enhanced resistance to disease in the emerging plants. Neither the Chinese publication nor any of the other cited prior art suggests such treated seeds.

Thus, each of the independent claims of the present application include at least one feature that is neither disclosed nor suggested by the Chinese publication nor any other cited prior art. Accordingly, all of the independent claims herein, i.e., Claims, 1, 25, 28, 33, 51, 54, 60 and 68 distinguish over the prior art of record and should be allowed.

D. The Dependent Claims

Having demonstrated that all of the independent claims are allowable, it is unnecessary to address the dependent claims which are also allowable. Without addressing all of the dependent claims, however, Applicant wishes to take this opportunity to point out further distinguishing limitations in several of those claims which are neither disclosed nor suggested by the cited references.

Dependent Claims 15-17, 46-47 and 58 all provide that the auxin or plant growth regulator is applied along with a metal selected from the alkaline earth metals, the transition metals, boron and mixtures thereof. Neither the Chinese publication nor any of the cited prior art references discloses or suggests such a combination.

Dependent Claims 23-24 provide that the auxin is encapsulated with a biologically compatible carrier to permit slow release of the active auxin. Neither the Chinese publication nor any of the cited prior art references discloses or suggests such an application method.

Dependent Claims 8-13, 30, 40-42, 56 and 63-65 all specify application ranges for the auxin or plant growth hormone. These ranges provide the required concentration to produce the desired inhibition in growth of plant pathogens or infestation by insects and their larvae, while not negatively effecting growth of the tissues of the treated plants. While the Chinese publication suggests spraying certain plants with a solution of about 10-20 ppm auxin and definitely less than 60 ppm auxin (where, it is said, adverse effects may result), it is not at all clear what the rate of application may be. Accordingly, neither the Chinese publication nor any of the cited

prior art references discloses or suggests the ranges and other limitations set forth in these claims.

Thus, additional reasons exist that distinguish at least these claims over the disclosures of the cited prior art references.

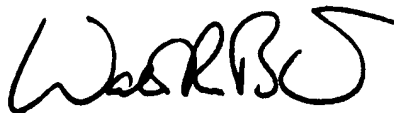
IV. THE CONCLUSION

In view of the above remarks, favorable consideration of amended and original Claims 1 and 5 to 70 now pending in the application is requested. It is believed that independent Claims 1, 25, 28, 33, 51, 54, 60 and 68, together with all of the remaining claims depending therefrom, are allowable. All claims being allowable, Applicant submits that this case should be promptly passed to issue.

No additional claims fees are required with this Amendment. If, however, any fees are required with the application, the Commissioner is authorized to charge any required fees to Deposit Account No. 29-2112. This authorization is provided in duplicate on the accompanying transmittal letter.

If the Examiner considers that a telephone conference would expedite allowance, he is urged to contact the undersigned at (713) 227-8008.

Respectfully submitted,



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